

TI116 – Replacement coating of aluminium wheels with powder coating.

Light alloy wheels

Wheels made of light alloy have enjoyed great popularity for decades.

It is the great degree of freedom in design and, in some cases, the lower weight that makes this type of wheel so popular. Such rims are usually provided with a multi-layered colouring ex works, which may include powder coatings. It should be noted that Aluminium wheels are subjected to an additional thermal process after casting and any subsequent forming process. This so-called precipitation hardening gives the rim a defined hardness and tensile strength.

This gives the rim an ideal balance of flexibility to absorb impact energy on the one hand and hardness on the other, so that neither deformation nor breakage of the rim occurs when such forces are applied.

Precipitation hardening takes place at temperatures that are in the range of the cross-linking temperatures of powder coatings, which is why wheel manufacturers take this material behaviour into account in the initial coating process and integrate it accordingly. The ideal material properties are therefore achieved after the final curing process in the painting process.

Follow-up coating

It is common practice for many job coaters to recoat used aluminium rims with powder coating for their customers.

Re-coating and "curing" powder coatings inevitably leads to an unwanted continuation of the hardening process described above in the rim material Aluminium.

This results in increasing embrittlement, i.e. the strength values of the aluminium in the rim decrease again. In extreme cases, wheels treated in this way can break under subsequent mechanical stress, i.e. even while driving! We therefore clearly recommend NOT to coat aluminium wheels with powder coatings when refurbishing them.

Warranties on the quality of a coating from the coater cannot cover such cases of damage, which is why we advise paint shops to inform potential customers about this risk and to reject corresponding paint orders.

Hint

This technical information refers to the current state of technical knowledge and will be adapted to new conditions if necessary. Detailed information can be obtained from our technical advisors if required.
